

(3.5) - Multiplying Polynomials & Expanding Binomials

Recall: Multiplying two linear terms together forms an area.

We can often represent this multiplication using algebra tiles.

On paper, we can represent this:

- (a) graphically (an area model), or
- (b) algebraically

Definitions:

1. Monomial - an expression with a single term

$3x$ or 7 or $5xy$ or a^2bc^3

2. Binomial - an expression with two terms

$(2x + 5)$ or $(a + 2b)$ or $(m^2 - pq)$

What is a **term**? A number or a variable or the product or quotient of numbers and variable.

3. Trinomial - an expression with three terms

$x^2 + 5x + 6$ or $2xy + a + 5$

4. Polynomial - an expression with any number of terms.

Red tiles: x^2 , x , 1

Blue tiles: $-x^2$, $-x$, -1

Evaluate: $(x - 1)(x - 2)$

What does the area represent?

What are the side lengths?

Ex.1 Evaluate using an area model

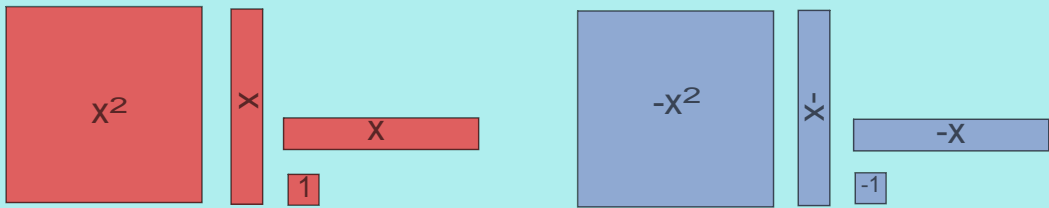
(a) $(x - 1)(x - 2)$

	x	-1
x	x^2	$-x$
-2	$-2x$	$+2$

Area

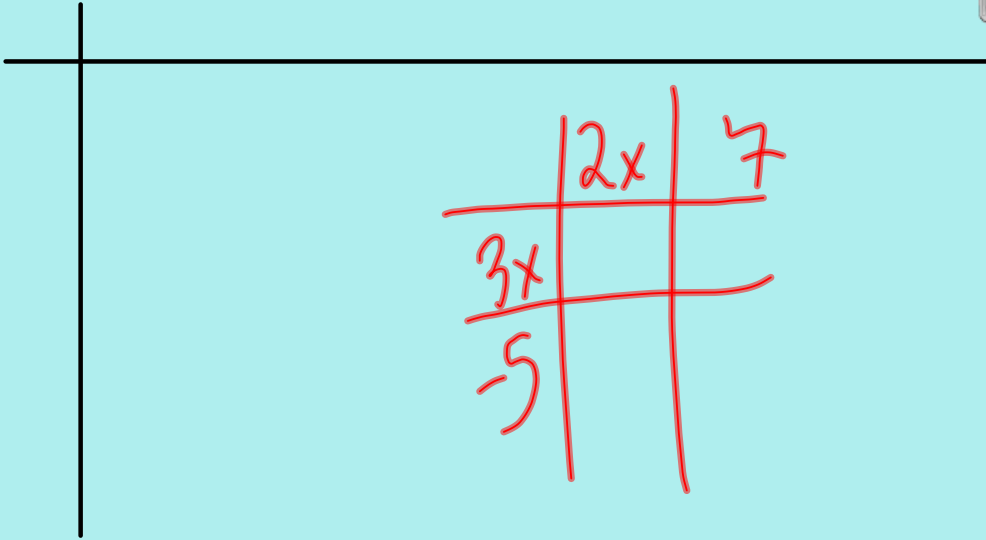

$x^2 - 3x + 2$

Same
Parabola



Algebra tiles are shown for x^2 , x , 1 , $-x^2$, $-x$, and -1 .

Evaluate: $(2x + 7)(3x - 5)$

Ex.1 Evaluate using an area model... continued

(b) $(2x + 7)(3x - 5)$

	$2x$	7
$3x$	$6x^2$	$+21x$
-5	$-10x$	-35

ANS

$$= 6x^2 + 11x - 35$$

Ex.2 Evaluate using the distributive property

(a) $2x(3x - 4)$

$$= 6x^2 - 8x$$

(b) $(\cancel{2x} + 3)(5x + 2)$

$$= 10x^2 + 4x + 15x + 6$$

$$= 10x^2 + 19x + 6$$

Ex.3 Evaluate using FOIL (First-Outer-Inner-Last)

(a) $(3x - 5)(2x + 7)$

$$= 6x^2 + 21x - 10x - 35$$

$$= 6x^2 + 11x - 35$$

Assigned Work: p.166-167 # 3 to 5 (odd), 8 to 10 (odd)